UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/054,595	01/22/2002	Donald Pannell	MP0078	7132

			EXAMINER
26703	7590	04/11/2006	WONG, WARNER

HARNESS, DICKEY & PIERCE P.L.C.
5445 CORPORATE DRIVE
SUITE 400
TROY, MI 48098

ART UNIT	PAPER NUMBER
2616	

DATE MAILED: 04/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/054,595	PANNELL, DONALD
	Examiner	Art Unit
	Warner Wong	2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>08 February 2006</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-84* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) *8-11 and 21-24* is/are allowed.

6)☒ Claim(s) *1-7,12-20,25-33,38-46,51-54,56-62,67-70,72,78,83 and 84* is/are rejected.

7)☒ Claim(s) *34-37,47-50,55,63-66,71 and 79-82* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described set forth
> in section 102 of this title, if the differences between the subject matter sought to be patented and the
> prior art are such that the subject matter as a whole would have been obvious at the time the invention
> was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

1.   Claims 1-2, 6, 12, 14-15, 19, 25, 27-28, 32, 38, 40-41, 45 and 51 are rejected

under 35 U.S.C. 103(a) as being unpatentable over Lipcon (US 4,380,088) in view of

Kim (US 2002/0085582).

Regarding claims 1, 14, 27, 40, Lipcon describes a processing

system/apparatus/method using the (half-duplex) channel CSMA/CD standard

comprising:

(the transmitter) transmitting a first frame; (col. 1, lines 46-53, where the

transceiver transmits a first frames);

(controller) terminating transmission of the first frame when a collision is detected

during the transmission; (col. 1, lines 46-53, where the collision detector/controller stops

transmission when collision is detected).

Lipcon fails to describe:

a dynamic backoff access module;

a buffer (transmitter) which transmits a received second frame before retransmitting the first frame when the second frame has a higher class of service (COS) than the first frame.

Kim describes:

a dynamic backoff access module (controller) (fig. 2, #10);

a buffer (transmitter) which transmits a received second frame before retransmitting the first frame when the second frame has a higher class of service (COS) than the first frame (paragraph 16).

It would have been obvious to one with ordinary skill in the art at the time of invention by applicant to incorporate the priority pre-emption elements (fig. 2) of Kim onto the apparatus of Lipcon. The motivation for combining the teaching is that it provides prioritized transmission of packets (Kim, paragraph 19).

Regarding claim 14, Lipcon fails to disclose a computer media embodying instructions which performs the process of the above-mentioned method/apparatus.

The examiner takes official notice that the above mentioned method/apparatus process can be incorporated by a computer media embodying instructions.

It would have been obvious for one with ordinary skill of art at the time of invention by applicant to incorporate the process performed by the method/apparatus into instructions saved in a computer media. The motivation for the incorporation of such process into computer media instructions is that it may provide economical cost savings by using software implementable means versus hardware implementable means.

Regarding claims 2, 15, 28, 41, Lipcon and Kim combined describe all limitations set forth in claim 1.

Lipcon further inherently describe:

sending a jam signal before transmitting another frame (CSMA/CD technology includes sending a jam signal before transmission of another frame, as separately explained by Halsall, "Data Communications, Computer Networks and Open Systems" text p. 262, but not incorporated as a reference).

Regarding claims 6, 12, 19, 25, 32, 38, 45, and 51, Lipcon and Kim combined describe all limitations set forth in claim 1.

Lipcon further describes:

computing a back-off period after terminating the transmission of the first frame, and retransmitting the first frame when the back-off period has elapsed (whether or not there are frames of higher class of service than the first frame ready for transmission) (col. 1, lines 59-63).

2.   Claims 3-4, 16-17, 29-30, 42-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lipcon in view of Kim, and further in view of Krishna (5,822,538).

Regarding claims 3, 16, 29, 42, Lipcon and Kim combined describe all limitations set forth in claims 1, 14, 27 and 40 respectively.

Lipcon and Kim fail to explicitly describe:

after terminating the transmission, incrementing an attempt count (by inherent counter);

discarding the first frame when the attempt count exceeds a predetermined

attempt threshold.

Krishna describes as a prior art a well-known TBEB algorithm for the backoff

process:

after terminating the transmission, incrementing an attempt count (by inherent

counter), and discarding the first frame when the attempt count exceeds a

predetermined attempt threshold (col. 1, lines 40-50).

It would have been obvious to one with ordinary skill in the art at the time of

invention by applicant to incorporate a limit to the number of frame transmission

attempts to the method/apparatus/switch to the combined teachings of Lipcon and Kim.

The motivation being that such incorporation prevent unbound transmission from input

frame build-ups, leading to system overload and failure.

Regarding claims 4, 17, 30, 43, Lipcon and Kim combined describe all

limitations set forth in claims 1, 14, 27 and 40 respectively.

Lipcon fails to describe class of service (COS) for input frames/cells.

Kim describes that there are different priorities (COS) for input frames/cells

(paragraph 16).

It would have been obvious to one with ordinary skill in the art at the time of

invention by applicant to incorporate the priority (COS) elements (fig. 2) of Kim onto the

apparatus of Lipcon. The motivation for combining the teaching is that it provides

prioritized transmission of packets (Kim, paragraph 19).

Lipcon and Kim combined fails to describe:

after terminating the transmission, incrementing an attempt count (by inherent

counter);

discarding the first frame when the attempt count exceeds a predetermined

attempt threshold for the class/QOS of service of the first frame;

Krishna describes:

after terminating the transmission, incrementing an attempt count (by inherent

counter), and discarding the first frame when the attempt count exceeds a

predetermined attempt threshold for the class/QOS of service of the first frame (col. 1,

lines 43-50, with a max. of 16 times, applicable for all classes).

It would have been obvious to one with ordinary skill in the art at the time of

invention to incorporate a limit to the number of frame transmission attempts to the

method/apparatus/switch of Lipcon and Kim. The motivation being that such

incorporation controls and prevents unbound input frame build-ups, leading to device

overload and failure.

3.   **Claims 5, 18, 31, 44** are rejected under 35 U.S.C. 103(a) as being unpatentable

over Lipcon in view of Kim as applied to claim 1 above, and further in view of Krishna

and Hazu (5,455,841).

Lipcon and Kim combined describe all limitations set form in claims 1, 14, 27 and 40 respectively.

Lipcon and Kim fail to describe:

after terminating the transmission, incrementing the attempt count (by inherent counter);

discarding the first frame when the attempt count exceeds a predetermined attempt threshold.

Krishna describes:

after terminating the transmission, incrementing the attempt count (by inherent counter) (col. 1, lines 43-50);

discarding the first frame when the attempt count exceeds a predetermined attempt threshold;

It would have been obvious to one with ordinary skill in the art at the time of invention by applicant to incorporate a limit to the number of frame transmission attempts to the method/apparatus/switch of Lipcon and Kim. The motivation being that such incorporation controls and prevents unbound input frame build-ups, leading to device overload and failure.

Lipcon, Kim, and Krishna fails to describe:

discarding the first frame when the attempt count exceeds a predetermined threshold and the COS of the first frame falls below a predetermined discard threshold.

Hazu describes:

(discarding only if) within the class of service the first frame falls below a predetermined discard threshold (col. 4, lines 64-66 and col. 5, lines 1-2, "The lower cell loss priority [threshold] indicates that the cell .. can be discarded when the network overflowed, and the higher cell loss priority indicates that the cell .. cannot be discarded under any circumstances.")

It would have been obvious to one with ordinary skill in the art at the time of invention by applicant to incorporate a discard threshold (Cell Loss Priority) for each COS. The motivation being that such incorporation controls and prevents unbound input frame build-ups, leading to device overload and failure.

4.   **Claims 7, 13, 20, 26, 33, 39, 46, 52** are rejected under 35 U.S.C. 103(a) as being unpatentable over Lipcon in view of Kim as applied to claim 6, and further in view of Krishna.

Lipcon and Kim combined describe all limitations set forth in claims 6, 12, 19, 25, 32, 38, 45 and 51 respectively.

Lipcon and Kim fail to describe:

computing the back-off period as a function of the class of service;

Krishna describes:

computing the back-off period as a function of the class of service (i.e. priority) (fig. 2B, #74, 80,82).

It would have been obvious to one with ordinary skill in the art at the time of invention by applicant to incorporate a back-off period as a function of class of service.

The motivation being that transmission frames with higher priority may be time-sensitive

and should be attempted to retransmit first, which in turn should have a small back-off

period than lower priority frames.

5.   Claims 53-54, 56, 61, 67, 69,70,72,77 and 83 are rejected under 35 U.S.C.

103(a) as being unpatentable over Saxena (2003/0103517) in view of Lipcon and Kim.

Regarding claims 53 and 69, Saxena describes an Ethernet (i.e. IEEE 802.3 or

CSMA/CD per IEEE working group definition) based switch comprising:

a first/second port (fig. 1, #105a/105c) in communication with a first half-duplex

channel (half-duplex inherent from Ethernet definition);

a memory (fig. 1, #125);

wherein the first port communicates with the second port via the memory

(paragraph 21);

wherein the first/second port comprises:

a first/second transmitter to transmit data over the first half-duplex channel

(inherent in ports that transmit);

a first/second controller (fig. 1, #130a/130c);

Saxena fails to describe:

(the first/second transmitter) transmitting a first/third frame;

(the first/second controller) terminating [the first/second transmitter from]

transmission of a first/second frame [of the data] when a collision is detected during the

transmission.

Lipcon describes:

(the first/second transmitter) transmitting a first/third frame (col. 1, lines 46-53,

where each device transceiver/transmitter transmit a first/third frame);

(the first/second controller) terminating [the first/second transmitter from]

transmission of a first/second frame [of the data] when a collision is detected during the

transmission (col. 1, lines 46-53, where the collision detector/controller stops

transmission when collision is detected).

It would have been obvious to one with ordinary skill in the art at the time of

invention by applicant to incorporate the CSMA/CD transceiver elements of Lipcon

within the ports of Saxena. The motivation for combining the teaching is that it provides

prioritized transmission of the transmitting packets (Kim, paragraph 19).

Saxena fails to describe:

determine a class of service (set a priority) for each frame after termination of

transmission from collision;

the first/second transmitter transmits a second/fourth frame before retransmitting

the first/third frame when the second/fourth frame has a higher class of service (COS)

than the first frame.

Kim describes:

determine a class of service (set a priority) for each frame after termination of

transmission from collision (paragraph 16);

the first/second transmitter transmits a second/fourth frame before retransmitting the first/third frame when the second/fourth frame has a higher class of service (COS) than the first frame (paragraph 16).

It would have been obvious to one with ordinary skill in the art at the time of invention by applicant to incorporate Kim's prioritization in frame transmission to the Ethernet switch of Saxena and Lipcon. The motivation being that transmission frames with higher priority may be time-sensitive and should be transmitted first.

Regarding claims 54 and 70, Saxena, Lipcon and Kim combined describes all limitations set forth in claims 53 and 69 respectively.

Saxena further describes:

a (first) memory portion to store the first and second frames and another/second memory portion to store the third and forth frames (paragraph 23, where copies of received data frame has particular locations);

Regarding claims 56 and 72, Saxena, Lipcon and Kim combined describe all limitations set forth in claim 53 and 69 respectively. Saxena further describes:

Sending a jam signal before transmitting another frame (paragraph 20, where Ethernet = CSMA/CD = 802.3 (see definition within www.ieee802.org), a technology which includes sending a jam signal before transmission of another frame, as separately explained by Halsall, "Data Communications, Computer Networks and Open Systems" text p. 262, but not incorporated as a reference).

Regarding claims 61, 67, 77 and 83 Saxena, Lipcon and Kim describe all limitations set forth in claims 53 and 69 respectively.

Saxena inherently describes:

computing a back-off period after terminating the transmission (whether or not there are frames of higher class of service than the first frame ready for transmission), and retransmitting the first frame when the back-off period has elapsed (Ethernet = CSMCA/CD, where upon collision which terminates transmission, the method computes a back-off period for retransmission);

6.   Claims 57-59 and 73-75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saxena in view of Lipcon and Kim, and further in view of Krishna (5,822,538).

Regarding claims 57 and 73, Saxena, Lipcon and Kim combined describe all limitations set forth in claim 1.

Saxena fails to describe:

after terminating the transmission, incrementing an attempt count by a counter.

Krishna describes as a prior art a well-known TBEB algorithm for backoff:

after terminating the transmission, incrementing an attempt count (**by an**

inherent counter) [for discarding excess-attempted frames] (col. 1, lines 40-50).

It would have been obvious to one with ordinary skill in the art at the time of

invention to incorporate a limit to the number of frame transmission attempts to the

switch. The motivation being that such incorporation prevents unbound transmission

from input frame build-ups, leading to system overload and failure.

Regarding claims 58 and 74, Saxena, Lipcon, Kim and Krishna combined

describe all limitations set forth in claim 57.

Saxena fails to describe:

incrementing an attempt count;

discarding the first frame when the attempt count exceeds a predetermined

attempt threshold.

Krishna further describes as a prior art a well-known TBEB algorithm for backoff:

after terminating the transmission, incrementing an attempt count;

discarding the first frame when the attempt count exceeds a predetermined

attempt threshold (col. 1, lines 40-50).

It would have been obvious to one with ordinary skill in the art at the time of

invention to tally the transmission attempts and discard the first frame after exceeding a

certain threshold as per Krishna for the combined teachings of Saxena, Lipcon and Kim.

The motivation being that such incorporation prevents unbound transmission from input

frame build-ups, leading to system overload and failure.

Regarding claims 59 and 75, Saxena, Lipcon, Kim and Krishna combined describe all limitations set forth in claim 57.

Saxena fails to describe:

after terminating the transmission, incrementing an attempt count (by inherent counter);

discarding the first frame when the attempt count exceeds a predetermined attempt threshold for the class/QOS of service of the first frame;.

Krishna further describes:

after terminating the transmission, incrementing an attempt count (by inherent counter);

discarding the first frame when the attempt count exceeds a predetermined attempt threshold for the class/QOS of service of the first frame (col. 1, lines 43-50, with a max. of 16 times, applicable for all classes).

It would have been obvious to one with ordinary skill in the art at the time of invention to tally the transmission attempts and discard the first frame after exceeding a certain threshold as per Krishna for the combined teachings of Saxena, Lipcon and Kim. The motivation being that such incorporation prevents unbound transmission from input frame build-ups, leading to system overload and failure.

7.   **Claims 60 and 76** are rejected under 35 U.S.C. 103(a) as being unpatentable over Saxena in view of Lipcon and Kim as Krishna as applied to claims 57 and 73 above respectively, and further in view of Hazu (5,455,841).

Saxena, Lipcon, Kim and Krishna combined describe all limitations set form in claim 57.

Saxena, Lipcon and Kim fail to describe:

after terminating the transmission, incrementing the attempt count (by inherent counter) (col. 1, lines 43-50);

discarding the first frame when the attempt count exceeds a predetermined attempt threshold;

Krishna further describes:

after terminating the transmission, incrementing the attempt count (by inherent counter) (col. 1, lines 43-50);

discarding the first frame when the attempt count exceeds a predetermined attempt threshold;

Saxena, Lipcon, Kim and Krishna fail to describe:

discarding the first frame when the attempt count of transmission attempts by the attempt counter exceeds a predetermined attempt threshold and the class of serice of the first frame falls below a predetermined discard threshold.

Hazu describes:

(discarding only if) within the class of service the first frame falls below a predetermined discard threshold (col. 4, lines 64-66 and col. 5, lines 1-2, "The lower cell loss priority [threshold] indicates that the cell .. can be discarded when the network overflowed, and the higher cell loss priority indicates that the cell .. cannot be discarded under any circumstances.")

It would have been obvious to one with ordinary skill in the art at the time of invention by applicant to incorporate a discard threshold (Cell Loss Priority) for each COS. The motivation being that such incorporation controls and and prevents unbound input frame build-ups, leading to device overload and failure.

8.   **Claims 62, 68, 78 and 84** are rejected under 35 U.S.C. 103(a) as being unpatentable over Saxena in view of Lipcon and Kim set forth in claims 61, 67, 77 and 83 respectively, and further in view of Krishna.

Saxena, Lipcon and Kim combined describe all limitations set forth in claims 61/67.

Saxena, Lipcon and Kim fail to describe:

Computing the back-off period as a function of the class of service.

Krishna describes:

Computing the back-off period as a function of the class of service (priority) (fig. 2B, #74, 80, 82).

It would have been obvious to one with ordinary skill in the art at the time of invention by applicant to incorporate a back-off period as a function of class of service. The motivation being that transmission frames with higher priority may be time-sensitive and should be attempted to retransmit first, which in turn should have a small back-off period than lower priority frames.

Allowable Subject Matter

9.   Claims 8-11 and 21-24 allowed.

10.   Claims 34-37, 47-50, 55, 63-66, 71 and 79-82 are objected to as being

dependent upon a rejected base claim, but would be allowable if rewritten in

independent form including all of the limitations of the base claim and any intervening

claims.

Conclusion

11.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Warner Wong whose telephone number is 571-272-

8197. The examiner can normally be reached on 5:30AM - 2:00PM, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on 571-272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HASSAN KIZOU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

Warner Wong
Examiner
Art Unit 2616

ωω